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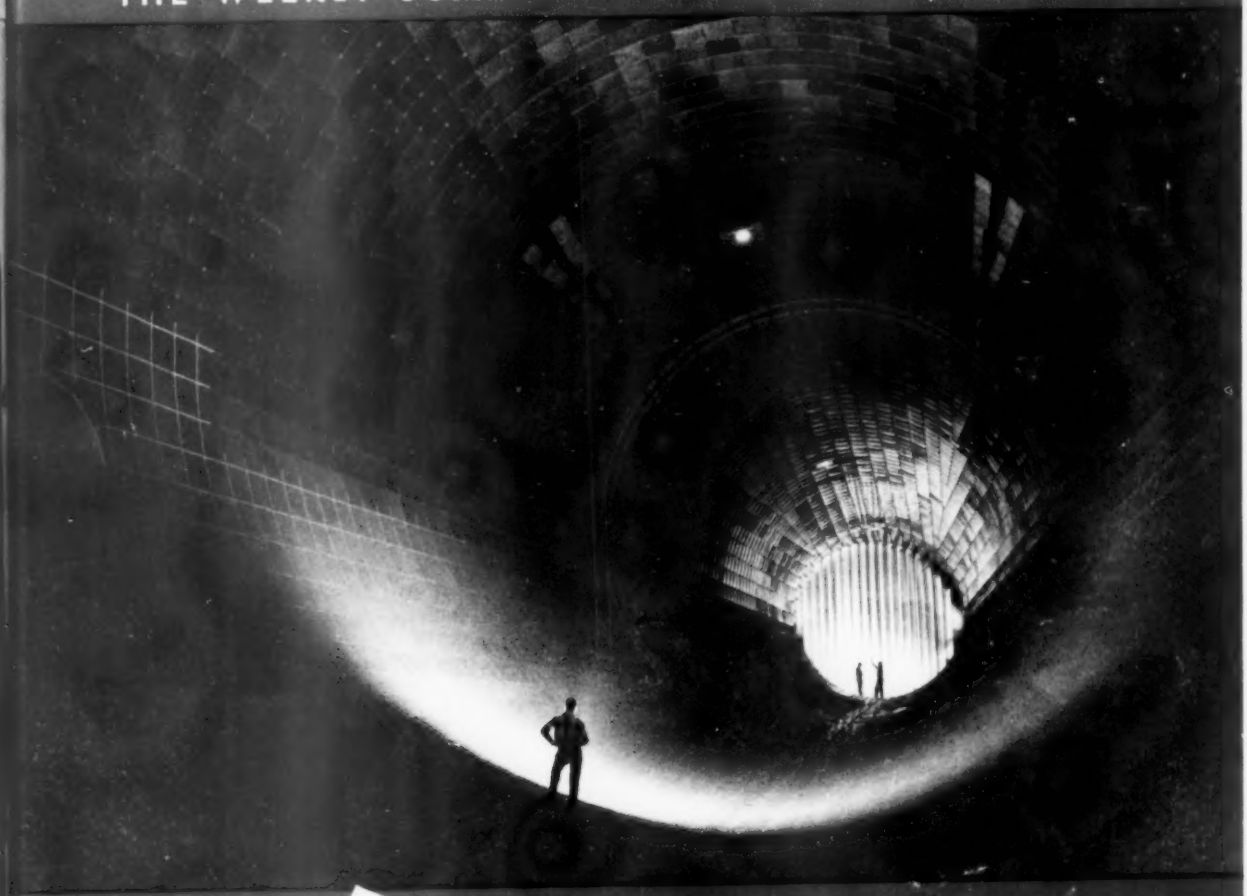
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Supersonic Circuit
See Page 434

A SCIENCE SERVICE PUBLICATION

PHYSICS

Uranium Optical Maser

➤ A NEW OPTICAL MASER, a device for greatly amplifying light, has been made from uranium to give the first continuous generation of coherent light waves.

Optical masers are expected to have important applications in sending and receiving signals from satellites and other objects in space, in projecting television pictures, in photographing astronomical bodies, and in medical diagnosis by X-rays or fluoroscopy. By using optical masers, super-sharp pictures heretofore unobtainable can be made.

The uranium optical maser—previous devices were made of ruby—was discovered by Drs. Peter P. Sorokin and Mirek J. Stevenson of International Business Machines Corporation. Their report on how the uranium optical maser works is reported in the Physical Review Letters, 5: 557, 1960.

By using uranium, they found it possible for the first time, to generate continuous and coherent light waves in the infrared portion of the electromagnetic spectrum.

The scientists also developed a second optical maser device, made from samarium. Operation of this device, which operates in the visible light spectrum, will be reported in the IBM Journal of Research, Jan., 1961.

Ruby optical masers, light from one of which was recently sent 25 miles, transmit light in pulses and require a fair amount of power to operate.

Power requirements of the uranium optical maser are only a five-hundredth that of the ruby.

Efficiency of the uranium optical maser can be increased by refining the optical design of apparatus in which it is used. Both the uranium and samarium devices are cylinder-shaped crystals, silvered at each end.

The optical maser system of communication is expected to be especially useful for space communications as there are few dust particles and no moisture to scatter the light as they do in the earth's atmosphere.

Development of optical masers was suggested early in 1959 by Dr. C. H. Townes, now a consultant for the Institute for Defense Analyses, Washington, and Dr. A. L. Schawlow of Bell Telephone Laboratories. They received a patent on the optical maser this year.

Maser is a coined word that stands for Microwave Amplification by Stimulated Emission of Radiation. The first masers operated in the radio wave range.

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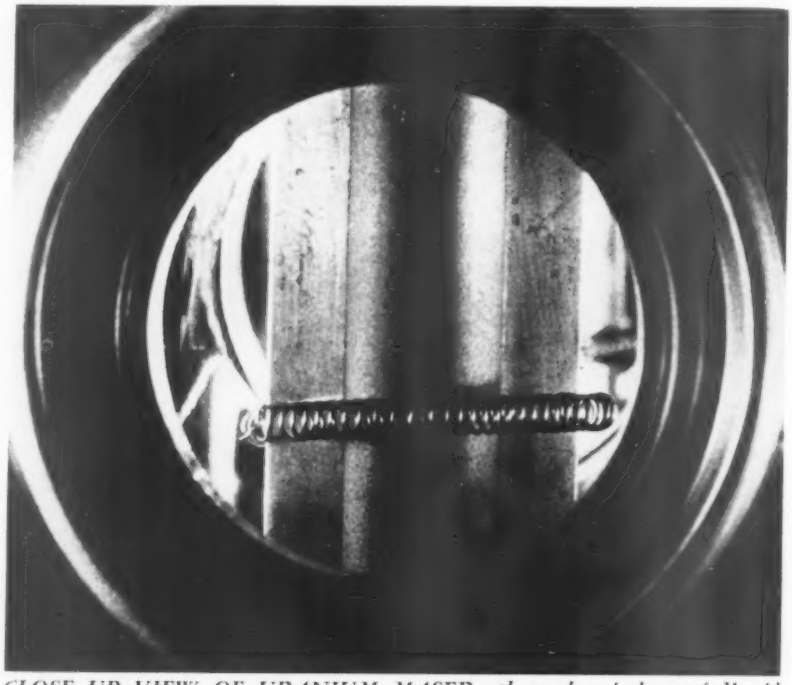

CLOSE UP VIEW OF URANIUM MASER—through window of liquid helium dewar flask.

ENGINEERING

Meets Space Challenge

See Front Cover

➤ TWENTY-ONE of the nation's 25 top priority space and weapons systems have been tested at the Arnold Engineering Development Center of the Air Research and Development Command in Tullahoma, Tenn.

The Center is a $325,000,000 complex of stainless steel pipes, tunnels and platforms. Items coming through the Center are space, ballistic and atmospheric flight weapons, and vehicles of the future. Ninety percent of the work done here is classified.

In the unclassified area, however, general knowledge of aerodynamics, propulsion and rocket technology, valuable both to industry and civilian agencies of government, are made available.

The Arnold Center can test equipment ranging in size from full-scale vehicles to small-scale models, under conditions ranging from altitudes at sea level to more than 200,000 feet, and from subsonic velocities to those in the hypersonic range at Mach 20. (Mach 1 equals the speed of sound, which is 763 miles per hour at sea level.)

The success in the reentry and recovery of the Air Force's Discoverer satellite capsule was due to the Center's tests on parachutes designed to return the capsule safely through the earth's atmosphere.

Its wind tunnel facilities permitted testing the parachute alone with no risk to the satellite or its payload at altitudes and speeds to which it would be subjected in space. At 55,000 feet and at winds eight times the speed of sound, the type of parachute used in earlier Discoverer shots that failed in re-entry was ripped to shreds in one or two seconds.

Arnold Center engineers studied the cause of failure and designed the two-stage chute that passed the wind tunnel tests.

The vast wind tunnels of the Center have movable walls so that air pressures, winds and speeds can be stepped up by narrowing the "throat" through which the air must go before it reaches the weapon or vehicle being tested.

The ducting in the supersonic circuit of the propulsion wind tunnel, seen on the cover of this week's SCIENCE NEWS LETTER, ranges in diameter from 27 to 62 feet.

The inner wall is lined with square, stainless steel panels, stuffed with fiberglass pillows. This provides insulation to maintain heat in the tunnel when high temperatures are needed for certain tests.

Temperature, which ranges up to 650 degrees Fahrenheit, is controlled by 100,000 gallons per minute capacity air-to-water heat exchangers.

The tunnel has an altitude simulation capacity of 200,000 feet and can operate between Mach 1.5 and 4.5.

The flexible nozzle wall in the circuit is made of a special steel alloy of high yield and tensile strength. It is 1½ inches thick, 100 feet long and 16 feet high and took two years to build.

"It is the most advanced facility of its kind in the world," Gen. Homer Boushey, AEDC Commander, said.

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MEDICINE

Arthritis Clue in Blood

Rheumatoid arthritis may develop from exposure to an antibody-producing material. A blood substance, produced in laboratory animals, resembles the human rheumatoid factor.

➤ RHEUMATOID ARTHRITIS may develop as a result of extended exposure to an antigen, or antibody-producing material.

This possible clue to the mystery surrounding rheumatoid arthritis was reported by Drs. John Abruzzo and Charles L. Christian of the Presbyterian Hospital, New York. They told the American Rheumatism Association meeting in Dallas, Tex., that they had produced in laboratory animals a blood substance resembling the human rheumatoid factor.

The scientists said it is not known whether this factor is a possible cause or by-product of the disease. Rabbits they injected with certain killed bacteria developed a chain reaction in their blood that formed antibody-like substances. These behaved in many ways like the human rheumatoid factor.

Strengthening this suggestion was the report of a new substance by Drs. Ralph Heimer, Josue M. Corcos and Carlo Nosenzo of New York's Hospital for Special Surgery-Cornell Medical Center. The substance is apparently specific for rheumatoid arthritis but distinctly different from the rheumatoid factor.

This substance, called by the investigators "inhibitor of complement fixation" or ICF, was found in the blood of more than 50 patients suffering from rheumatoid arthritis. It also was found in the blood of some patients with systemic lupus erythematosus and scleroderma, diseases in which the damage to connective tissue is similar to that found in rheumatoid arthristis.

The role of ICF, the scientists said, was one of interfering with the normally prompt interaction of the complement system with antigen-antibody reactions. The complement system has been known to aid in the removal from the human body of foreign and toxic substances previously neutralized by antibody.

Thus the assumption of Drs. Abruzzo and Christian that rheumatoid arthritis may develop as a result of extended exposure to antigen is supported. ICF, by obstructing the prompt removal of foreign and toxic substances, including virus and bacteria, might be directly involved in the disease process.

• Science News Letter, 78:435 December 31, 1960

MEDICINE

Designs Suction Tube

➤ A NEW TRACHEOTOMY tube has been designed by a registered nurse at the University of Florida Health Center, Gainesville, Fla.

Called a "direct suction tracheotomy tube," the device has brought relief in experimental use on tracheotomy patients. It has also enabled surgeons to perform some surgical procedures easier and faster on patients who must breathe by tracheotomy.

Invented by Miss Josephine Fountain of the University's Teaching Hospital and Clinics, the device consists of two tubes, one inside the other, with a small neck on the outside that has two openings.

With the device, nurses, physicians, or even the patient, are able to easily clear the throat of mucus and other obstructions when breathing via tracheotomy. The new tube also permits easier and safer administration of anesthesia to patients with tracheotomies who require surgery.

Miss Fountain said that with the traditional tracheotomy tube, the application of suction to clear the patient's throat usually restricts breathing because it is necessary to insert a smaller tube through the tracheotomy tube.

The new device has two important advantages over the traditional tube. It may be used for administering oxygen, and the inside tube can be removed for cleaning with little or no discomfort to the patient.

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TUBE HAS BROUGHT RELIEF

PSYCHOLOGY

"Taking It Easy" Is Bad For Business Executives

➤ PHYSICIANS should not always tell worried, nervous business executives to "take it easy," Dr. Gerald Gordon, chief of the psychiatric section of the medical division of E. I. du Pont de Nemours and Co., Wilmington, Del., reported at a meeting of the Central States Society of Industrial Medicine and Surgery in Milwaukee, Wis.

He said that it is not true that "the only things we have to fear" is fear. "If a man wants to worry, let him," Dr. Gordon said. "The idea that a nervous man must be removed from a situation, leave work, calm down and rest is a delusion."

Dr. Gordon said that more and more good men were being relieved or removed from responsible positions because of such erroneous thinking. If the emotions were not released, they would be turned inward and result in "suicide through stress diseases like heart disorders," Dr. Gordon said. He explained that the basic emotions of pain, hunger, fear and rage are designed to help us adapt to the complex, changing times.

"That is not to say that many men do not work too hard and should not take a vacation once in a while," he said. "Many do. But modern man seems to have forgotten that life itself is a conflict. So is society. The full free life, which often includes a good scrap, has become secondary to the desire for constant peace and tranquility."

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PSYCHOLOGY

Scraping Noise Found Worst Known to Man

➤ A TEST at Britain's National Physical Laboratory showed that the most annoying noise known to man is that made by scraping a saucepan with a knife, Dr. B. Wheeler Robinson of the Laboratory's applied physics division reported to the Royal Society of Health in London.

To prove his point, Dr. Robinson played a tape recording of the noise. For comparative purposes he relayed nine other examples of "quieter" noise, including jet aircraft, motorcycles, a road drill, motors and the jungle.

Space travel, Dr. Robinson suggested, is the best hope of freedom from din, and from noise of all types since, without air, there can be no noise, only vibration. Space travel will introduce us to a completely silent world.

Dr. Robinson said he could hold out little hope for early international agreement that would lead to the framing of legislation and regulations against noise.

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SCIENTIA INTERNATIONAL

NOVAS DEL MENSE IN INTERLINGUA

Astronautica.—Le problema del calor del reentrata de astronaves in le atmosphera terrestre va probabilemente esser solvite super le base del mesme simple principio que explica proque un pote metallic sur le furno nunquam attinge un temperatura multo in excesso de illo de su contento. Si iste contento es aqua, le calor del pote non monta multo in supra de 100 C usque omne le aqua es evaporate. In le caso de astronaves on va usar un evaporabile revestimento (graphite, per exemplo) que ha un tolerabile temperatura de evaporation e que require grande quantitates de calor in su transformation ab solido ad gas.

Philosophia Cultural.—Nostre era es plus grande que lo que le majoritate de nos suppone. Isto es le opinion de Dr. Caryl P. Haskins, presidente del Institution Carnegie de Washington, e es formulate in su reporto annual. Nostre era—observa Dr. Haskins—ha omne le characteristicas que (in retrospecto) nos discerne in grande periodos del passato. Nostre era ha le mesme conscietate, como ille previe periodos, del proximitate de nove frontieras in le mundo physic, le mesme fermentation ideologic, le mesme nove e violente demandas in le campo del organisation politic e social. Periodos de grande attingimentos intellectual e technic (como le nostre), es characteristicamente accompaniate de incertitude e questionamento. Super iste base, Dr. Haskins conclude que le supreme deber del veniente decennios va esser pro nos de trovar medios que re-establi un adjustamento e equilibrio inter le nove poteres, le nove valores, le nove problemas, e le nove requirimentos de un latere e le intacte continuitate del principios e charactersticas fundamental de nostre ethica social.

Rheumatologia.—Le frequente occurrentia de neuropathia peripheric in patientes con arthritis rheumatoide es un phenomeno—secundo un studio historico-statistic al Clinica Mayo—que non pote esser traciate in retro usque ante le introduction de cortisona e altere steroides in le therapia de arthritis rheumatoide. Il pare tractar se de un phenomeno de dishabituation drogal. Le conclusion es que iste dishabituation debe esser effectuate gradualissimemente.

Alimentos.—Le aroma de ostreas bullite es causate primarimente per sulfuro dimethylic. Iste constatation esseva facite al Universitate Wisconsin como parte de un investigation plus extense que visa a identificar le causas chimic de desirabile e indesirabile gustos in alimentos commun. Plus precise information in iste area pote esser usate in establir e mantener plus alte e plus objectivemente uniforme standards de gusto in le diverse productos del industrias alimentari.

Telecommunicationes.—Le Consilio pro Telecomumnicationes del Commonwealth Britannic promove currentemente e con energia le plano de completar in circa 1964 un systema de cablos de telephonia totalmente circumglobal. Le nove cablo transatlantic—que essera completate in 1961 e que es designate (appropriatemente) como CANTAT—va esser supplementate per un simile cablo transpacific, con varie extensiones portante le costo total del projecto mundial a circa 225 milliones dollars.

Astronautica.—Le retrovate capsula de Discoperitor XVII contineva specimens de tissu organic sub varie formas de protection. Le specimens se trovava durante 50 horas a un altitude de circa 1000 km a un tempore quando le activitate eruptive del sol esseva intensissime. Le observation del specimens depost lor retorno permitte le sequente assertiones: (1) Aluminio provideva un melior protection contra le radiation cosmic que metallos pesante (como auro e plumbo). De facto, le metallos pesante esseva periculose a causa del generation secundari de radios X. (2) Le specimens organic includeva vive tissu ocular human (que es sensibilissime pro le effectos de irradiation ionisante). Iste tissu superviveva intacte. (3) Le specimens pare haber recipite non plus que 32 a 35 rad de irradiation in le curso del 50 horas de lor volo al altitude mentionate.—Iste constatationes indicarea que le irradiation cosmic non representa le formidabile barriera al futur astronavigation que on ha supponite. Tamen, altere reportos de data plus recente monstra que organismos vive es occidite a altitudes in le ordine de approximativemente 2000 km.

Progresso Scientific.—Le sequentes es le dece plus importante successos de 1960 in le dominio del scientias, secundo le selection de Dr. Watson Davis, director de Science Service: (1) Repetite successos in le lanceamento de satellites artificial pro objectivos meteorologic e telecommunicatori, e le re-attrappation de capsulas de satellite post prolongate volos circumglobal. (2) Photographia de systemas stellar del rango de nostre via lactee a distantias de sex milliardos annos lumine. (3) Hybridisation de gallo de India e gallina domestic, le prime cruciation de duo familias de aves. (4) Le discoperta de precursores chimic de materia vive in meteorites, un indication del possibile existentia de vita in altere regiones del universo. (5) Autorisation del uso del vive vaccino oral antipoliomyelitic de Sabin. (6) Records de altitude in ballones con paracaditage, demonstrante le capacitate del homine de supportar le conditiones del spatio extra-atmospheric. (7) Registration de undas cerebral ab cellulas solitari. (8) Le construction del si-appellate "maser optic" pro le amplification de lumine, que promitte esser de grande utilitate in photographia astronomic, diagnose medical, e telecommunication. (9) Le installation de un observatorio radiotelescopic pro le reception de signales possibile ab creaturas intelligente in altere corpores celeste. (10) Le fabrication de un steroide synthetic a potentia contraceptive que es obtenibile in forma de pillulas super le base de un prescription medical.

Medicina General.—Morsuras de serpentes esseva tractate a successo superior in experimentos animal per medio del technica del si-appellate "perfusion isolate". Le membro afficite—il debe tractar se de un gamba o bracio, sed felicemente quasi omne morsuras de serpentes concerne tales—es isolate per medio de un tourniquet. In le membro un circulation extracorporee es instituite per duo tubos inserite in un arteria e un vena. Alora iste circulation partial es tractate con antivenina (un preparato derivate ab le sanguine de cavallos immunisate) e eluite con sanguine a contento de heparina. Postea le tourniquet es relaxate, e le patiente recipe un transfusion conventional. Iste technica, disveloppate al Universitate California, ha non ancora essite applicate a humanos.

Recercas de Cancere.—Le uso de radioactive phosphato in le alleviamento del dolores de cancere de osso es cognoscite. Esseva trovate al Hospital pro Veteranos a Hines in Illinois que metaphosphato radioactive se localisa melio in o circum le osso cancerose que simple phosphato radioactive. Le agente esseva usate in combination con estrogeno.

Statistica.—In 1959, le numero total del mortes in le Statos Unite esseva 1.656.814.

Astronautica.—Le statounitese programma astronautic provide un rocchetta lunar pro 1961 e rocchettas veneric e martian pro 1963.

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GENERAL SCIENCE

Reading Interlingua

➤ YOU CAN READ Interlingua if you had no more than one semester of high school French or Spanish or Latin and flunked it. You can read and understand a great deal of it even if you never had contact with any foreign language.

Send this page to an acquaintance abroad and tell him that he can get additional information about Interlingua from Alexander Gode, SCIENCE SERVICE's Interlingua Division, 80 E. 11th St., New York 3, N. Y.

Financial contributions to the Interlingua program are needed.

• Science News Letter, 78:436 December 31, 1960

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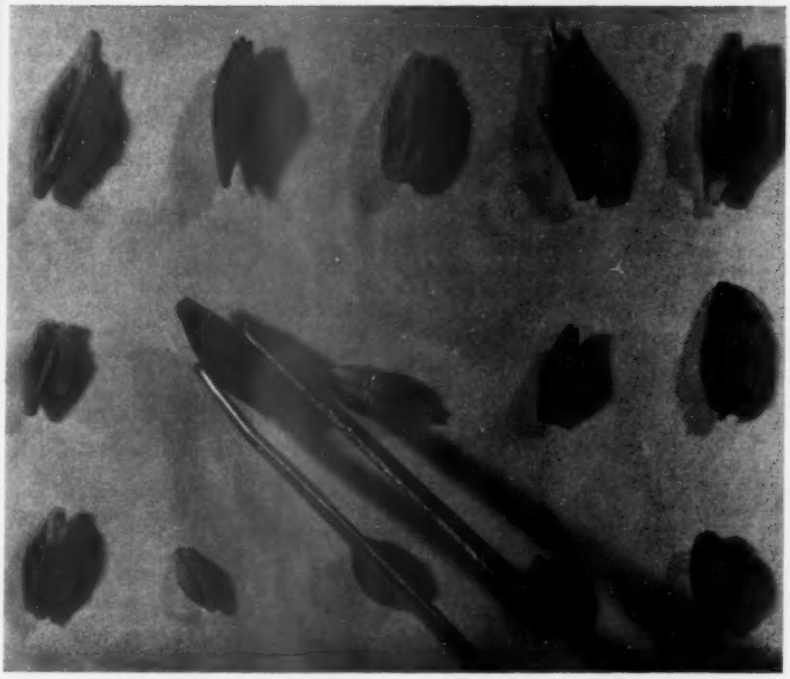

VAST GENETIC VARIETY IN SIZE, SHAPE AND COLOR

AGRICULTURE

Unique Barley Type

➤ A UNIQUE TYPE of barley that adapts to its surroundings so quickly it might be said to have jet-propelled evolution abilities is now being distributed throughout the world by the United Nations' Food and Agriculture Organization (FAO).

Coit A. Suneson, U.S. Department of Agriculture plant breeder stationed at the University of California's farm at Davis, told the American Society of Agronomy meeting in Chicago that the barley is "a potential giant step to provide more food for the world."

The 700-pound barley crop, harvested this season from two-fifths of an acre at Davis, has the built-in capacity to adapt itself to any of the world's grain growing areas and to improve its own production by a process of quickened evolution.

During 35 years on the Davis campus, an early version of Mr. Suneson's barley has increased its production at the rate of one percent annually, with a minimum of care. But with the best plant selection skills now known, the average yearly increase has been boosted as high as three percent.

These facts have tremendous implications for underdeveloped nations where grain production is limited by lack of money and know-how.

The self-improving barley was developed by using two unusual approaches to plant breeding. One was the random intercrossing of 7,500 types of barley—essentially resulting in a calculated hodge-podge of genetically favorable characteristics. The second step was to plant this mixed-ancestry seed in as many areas as possible, during which time plant characteristics fitting the various environments multiplied and the weak or unsuitable characteristics dropped out.

The upshot is that the seed from the Davis crop, now being distributed in four-pound lots to barley breeders throughout the world, literally can be tossed into a field anywhere and something will come up. In successive plantings further adaptation will come about.

"Evolutionary plant breeding," as Mr. Suneson calls this speeded up selection process, is expected to do more than raise backward food standards. The program will put the world's barley assets into circulation rather than leaving them undiscovered or locked away in plant breeders' seed vaults.

Because this basic barley breeding stock will be scattered around the globe, Mr. Suneson said that if civilization is destroyed by nuclear war, the surviving peoples could tap this breeding reservoir and reap the evolutionary gains of all history in a few years.

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GENERAL SCIENCE

Ours Is a Great Age Says Carnegie President

➤ OUR AGE is greater than you think.

Our times show all the elements that, in looking back, "distinguished a great age," Dr. Caryl P. Haskins, president of Carnegie Institution of Washington, said in his annual report.

Our time resembles earlier dynamic and critical eras, he said. It shows the same sense of new physical frontiers close at hand, the same ferment of new ideas, and the same new and violent demands upon political and social organization.

Periods of great intellectual and technical achievement, such as the present one, are characteristically accompanied by grave uncertainty and questioning, Dr. Haskins said, adding:

"Our age may be considered typical of the most significant eras of change since the fall of the Roman Empire."

Dr. Haskins charged that major tasks for the coming years will be to find means to adjust to the "new powers, new values and new challenges and requirements" while preserving intact the fundamental values and characteristics of our society.

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ROCKETS AND MISSILES

Space Goal Improved

➤ SUCCESS WAS PREDICTED accurately for the firing of the Mercury escape capsule from a Redstone missile by Dr. T. Keith Glennan, National Aeronautics and Space Administrator.

While this success brings closer to achievement the United States goal of manned space flight, Dr. Glennan told SCIENCE SERVICE that the whole program of launch vehicles currently is undergoing "re-examination and re-assessment." Recent NASA failures prompted the re-appraisal, notably the fizzle of the Atlas-lifted lunar Explorer VI last week and the failure of the Mercury capsule escape system launched from a Jupiter rocket last month.

"We expect failures. We learn from them; and what we learn helps us toward ultimate success in all our space goals," Dr. Glennan said. "The recent failures certainly have in no way significantly affected Project Mercury," he added.

"People should understand that this is a research and development program and we must go it a step at a time," he said.

"A safe launch and return of man in space must be reasonably assured before we go further."

There have been rumors that Dr. Glennan might be asked by the President-elect to continue as NASA's administrator. Dr. Glennan's only comment on this rumor was, "We'll have to wait and see." Present plans are that he will return to Case Institute of Technology to his position as its president.

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OBSTETRICS

Dome Reduces Labor Pain

➤ A DECOMPRESSION DOME for relaxing the abdominal wall and reducing pain during the first stage of labor has been developed. It is being well received by patients.

The dome looks something like an iron lung, but it has no back and extends only from mid-chest to mid-hip. In practice, the patients sit at an angle of 55 degrees, leaning against a rigid backboard. When a contraction occurs, she switches on the vacuum pump, which is an ordinary domestic-type vacuum cleaner connected to the dome by a hose.

The theory behind the dome's action is that the uterus is shaped like an elongated sac in the resting stage. During a contraction, the uterus tends to become spherical and rises forward. A tense abdominal wall will resist these changes, and the contracting uterus must use some of its energy to overcome this resistance. This action may be part of the cause of pain.

By creating a vacuum and lifting the abdominal wall away from the uterus, the pain is reduced, either slightly or considerably, and the uterus is free to sustain a stronger and more forceful contraction.

The Canadian team that developed the dome believes that in many cases the process of labor is considerably speeded up. Among the 46 women who used this method, the average time spent in decompression was about three hours for first childbirth, and about two hours for those who had previously borne at least one child. About half of the 46 were given sedation and "many of these could have managed without it," the researchers report in the Canadian Medical Association Journal, 83:1192, 1960.

The new dome is an improvement on a decompression suit developed last year by Prof. O. S. Heyns of Witwatersrand University, Johannesburg, South Africa. The dome does not immobilize the legs, leaves the birth canal accessible to examination, has a trap door in the top whereby the fetal heartbeat can be checked, and reduces the feeling of pressure on the chest—an oppressive sensation inherent in the suit model.

The researchers who developed the dome are Drs. Louis J. Quinn, R. A. McKeown, T. Moore and H. P. Dorr, all of St. Mary's Hospital in Montreal.

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PSYCHOLOGY

Mamma What Moves First

➤ A STUDY of what makes a chick love its mother indicates that the answer may be the chick's attraction to a conspicuous object.

For years psychologists have wondered how a chick knows its own mother and what makes him want to follow her. The theory that the chick would follow the first object that moved, be it mother hen or a cardboard box, was proposed and tested. Sure enough, when the hen was put out of sight and a box was pulled back and forth in view of the newly hatched chicks, they became attached to the box and preferred it to their own mother.

Then another psychology research group dug a little deeper and found that chicks preferred a motionless object illuminated by a flickering light to the same object illuminated by a steady light. This indicated, they believed, that retinal flicker was not only a necessary but an irreducible condition of "imprinting," as this type of attraction development is called.

Prof. Philip Howard Gray of Montana State College's department of psychology disagrees. His experiments showed that chicks three to five days old preferred the only object familiar to them. Some were shown only a black motionless circle on a gray background; others saw only a black triangle under the same conditions. In neither case did the light flicker.

When confronted with both the circle and the triangle, the familiar object was chosen. This indicates that "probably anything that will make an object stand out in the chick's visual environment will be a factor in imprinting."

"Motion would thus be a factor," Prof. Gray reports in Science, 132:1834, 1960, "but it is not an irreducible condition, and neither is retinal flicker."

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GENERAL SCIENCE

President's Adviser

➤ THE RESPONSIBILITIES of the President's science adviser must be expanded so that the President can effectively use new scientific ideas to help achieve national objectives.

By placing more emphasis on the development of the social sciences and devising a long-range program of scientific research, the President's Special Assistant for Science and Technology can contribute greatly to the attainment of national objectives.

This recommendation was one of several urged in a new report, "The Presidential Staff," by the National Planning Association in Washington, D. C. The report stressed strengthening the role of the presidential staff so that it can help the President meet the "challenge of the times."

It recommended that the science adviser be an "overseer" to all research activities conducted by and for the Government. He should initiate scientific studies reflecting the needs of the President, and stimulate interest in sciences largely ignored, such as the field of human behavior.

With most Government funds being spent on the concentrated research on missiles, weapons and nuclear energy, the social sciences have been largely neglected. Since political problems are both political and psychological, more must be learned about human behavior.

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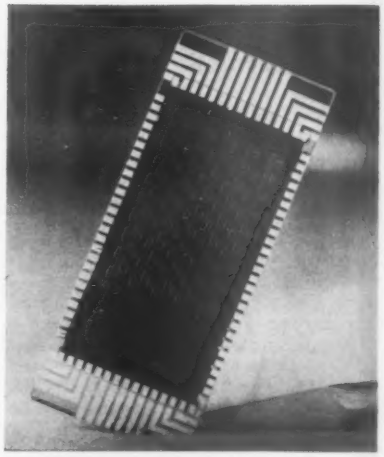
TECHNOLOGY

Film Memory Plane For Storing Information

➤ A DEVICE, the size of a postage stamp, for storing information has been developed and duplicated for the first time by automatic control techniques by scientists at International Business Machines Corp.

The device, a "cryogenic thin film memory plane," consists of a 19-layer "sandwich" that can store 40 different bits of information in cells or compartments. These information cells can be searched simultaneously for quick access to stored information.

• Science News Letter, 78:438 December 31, 1960



FILM MEMORY PLANE

ROCKETS AND MISSILES

Discoverer Satellites XVIII and XIX Launched

➤ THE GOLD-PLATED CAPSULE of Discoverer XVIII, sent aloft with biological specimens, was retrieved by plane near Hawaii after traveling 48 times around the earth. Besides testing the effects of radiation on human tissue, the satellite also carried equipment to be tested for reconnaissance satellites.

A Discoverer XIX satellite, 25 feet long, was launched Dec. 20 to measure the infrared radiation of the earth's atmosphere.

• Science News Letter, 78:438 December 31, 1960

• Books of the Week •

For the editorial information of our readers, books received for review are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C.

THE AIR FORCE BLUE BOOK 1961, Vol. II—Tom Compere, Ed.—*Bobbs*, 382 p., illus., $4.95. Story of the USAF today with compilation of aerospace facts.

ALL ABOUT FISH—Carl Burger, foreword by James W. Atz—*Random House*, 139 p., illus. by author, $1.95. Informative book for young readers.

ALL ABOUT GREAT MEDICAL DISCOVERIES—David Dietz—*Random House*, 140 p., illus. by Ernest Kurt Barth, $1.95. For boys and girls.

ALL ABOUT THE PLANETS—Patricia Lauber, foreword by Harlow Shapley—*Random House*, 139 p., illus. by Arthur Renshaw, $1.95. A beginner's text and guidebook to reliable background for planetary travel.

APPLIED IMAGINATION: Principles and Procedures of Creative Problem-Solving—Alex F. Osborn—*Scribner*, rev. ed., 379 p., $4.50. Textbook discussing the principle of "brainstorming"; first adopted by M.I.T.

BIOLOGICAL ACTIVITIES OF STEROIDS IN RELATION TO CANCER—Gregory Pincus and Erwin P. Vollmer, Eds.—*Academic*, 530 p., illus., $15. Papers and discussion of steroid metabolism and biochemistry, experimental tumors, hormones and human cancer.

CLASSICAL ELECTRICITY AND MAGNETISM—E. S. Shire—*Cambridge Univ. Press*, 396 p., illus., $7.50. Textbook designed to bridge the gap between elementary and mathematical treatment based on Maxwell's equations.

CLASSICAL MECHANICS—H. C. Corben and Philip Stehle—*Wiley*, 2nd ed., 389 p., $12. Among new material, discusses dissipative systems, transforms, accelerators, motion of meteorite dust, and magnetic resonance.

CLIMATOLOGY AT WORK: Measurements, Methods and Machines—Gerald L. Barger, Ed., with John C. Nyhan—*Weather Bureau (GPO)*, 109 p., illus., paper, 65¢. Describes functions and scope of the centralized climatological facility located at Ashville, N. C.

CONTINUOUS GEOMETRY—John von Neumann, foreword by Israel Halperin—*Princeton Univ. Press*, 299 p., $7.50. Reproduces the notes of lectures given by the author during the academic years 1935-37.

DIGITAL COMPUTER FUNDAMENTALS—Thomas C. Bartee—*McGraw*, 342 p., $6.50. Describes function and application of the computer and explains steps necessary for preparing a problem for a computer.

EMPLOYMENT IN AN UNDERDEVELOPED AREA: A Sample Survey of Kingston, Jamaica—W. F. Maunder—*Yale Univ. Press*, 215 p., $5. Case study of employment in metropolitan area with both urban industrialized and rural sectors.

GRAPHIC SURVEY OF SCIENCE—William Lemkin—*Oxford Bk. Co.*, rev. ed., 447 p., illus., $2.10; paper $1.25. Designed for easy grasp by the average student.

THE HISTORY OF MODERN CULTURE—Maurice Parmelee—*Philosophical Lib.*, 1,295 p., $10. Treatise traces the main course of cultural evolution.

HOW AMERICA EATS—Clementine Paddleford—*Scribner*, 495 p., illus., $10; to March 15: $7.95. Attractive volume with recipes of regional specialties, from Maines' lobster stew to California's citrus spare ribs.

INFORMATION PLEASE ALMANAC: Atlas and Yearbook 1961—Dan Golenpaul Associates, Eds.—*McGraw*, 895 p., illus., paper, $1.35. Reviews the events of 1960 with maps and photographs, and includes 800 pages of facts for reference.

INTRODUCTION TO PLANT GEOGRAPHY AND SOME RELATED SCIENCES—Nicholas Polunin—*McGraw*, 640 p., illus., $10. Deals with the composition, local productivity and distribution of the plant cover of the world.

LATE PLIOCENE FLORAS EAST OF THE SIERRA NEVADA—Daniel L. Axelrod and William S. Ting—*Univ. of Calif. Press*, 117 p., illus., paper, $2.50. Discusses the evidence of spore-pollen floras as to climate and vegetation of the area.

THE MAN WHO RODE THE THUNDER—William H. Rankin—*Prentice-Hall*, 208 p., photographs, $3.95. Story of Col. Rankin's unique survival, bailing out at 47,000 feet without pressure equipment and dropping seven miles through violent rain storm.

THE MUSEUM AT GHOST RANCH: A Pioneer Outdoor Interpretive Project in New Mexico—William H. Carr—*C. L. Pack Forestry Foundation*, 36 p., illus., paper, 50¢. Describes indoor-outdoor exhibits emphasizing soil, water and wildlife conservation.

ORGANOMETALLIC CHEMISTRY—H. Zeiss, Ed.—*Reinhold*, 549 p., $17.50. Monograph presents research subjects under active investigation by their respective authors.

OUR ATMOSPHERE—Theo Loebsack, transl. from German by E. L. and D. Rewald—*New Am. Lib.*, 190 p., illus., paper, 50¢. About clouds, sky colors, mirages, polar lights, weather, and the atmosphere's effects on life and man.

PEOPLE OF COVE AND WOODLOT: Communities from the Viewpoint of Social Psychiatry—Charles C. Hughes and others—*Basic Bks.*, 574 p., photographs, $10. Stirling County Study II, investigates three types of communities: County Seat, two relatively well-integrated small communities, and four disorganized neighborhoods.

POLYPROPYLENE—Theodore O. J. Kresser—*Reinhold*, 268 p., illus., $6.50. Brings together information on the properties, production and applications of this increasingly important thermoplastic.

POPULAR FINCHES—George W. Noreen—*All-Pets Bks.*, 32 p., illus., paper, 50¢. Describes and depicts a variety of finches and weavers, and how to keep them healthy in a home or backyard aviary.

RECURSIVE EQUIVALENCE TYPES—J. C. E. Dekker and J. Myhill—*Univ. of Calif. Press*, 213 p., paper, $5. Monograph concerned with a property of collections which is preserved under all effective one-to-one mappings.

SALINE WATER CONVERSION: Symposium, 1960—W. Sherman Gillam, Chmn.—*Am. Chemical Soc.*, Advances in Chemistry Series, No. 27, 246 p., illus., paper, $5.85. Collection of papers on most recent research.

• Science News Letter, 78:439 December 31, 1960

ERRATA, Vol. 78, Nos. 1-27, July-December, 1960

PAGE	TITLE BEGINS	CORRECTIONS
58	Jupiter, Saturn	Col. 3, par. 3, line 6, northeast *for* northwest.
77	Dimmest White	Line 3, J. *for* L.
91	Live Polio	Line 2, 180,000 *for* 108,000
163	Use Chemical	Par. 1, lines 3 and 4 *to read* L-quinate, that roses use to make aromatic substances. Par. 3 (p. 164), line 1, *delete* smelling; line 5 *to read* but converted or used more than half. *Delete* remainder of sentence.
198	Radiation Affects	Par. 4, line 4, *before* crabs *insert* horseshoe; line 6, less *for* more.
229	Make Better	Col. 1, par. 3, line 8, carbon *for* stainless.
261	Evolution Loses	Col. 1, par. 4, defect *for* effect.
270	Sumac	Col. 2, line 7, red *for* her.
291	History-Making	Col. 3, lines 2 and 3 *to read* pheasants, turkeys and domestic fowl. None of the chicken-turkey hybrids ever hatched.
295	Astronomical Events	Par. 2, lines 2, 3 and 4, *to read* date of a conjunction of Venus with the sun; par. 3, line 7, *to read* date June 26, 3391 B.C., Gregorian calendar, as the beginning of the

GENERAL SCIENCE

Science Forecast for 1961

New fundamental particle to be created, Kennedy administration to apply research to peace, seismograph network to tell atomic tests from earthquakes, Watson Davis predicts.

➤ FOR 1961, the world will see some significant developments in science and technology that on the basis of past efforts are likely to come to fruition. For example:

1. Creation of a new kind of fundamental particle, the magnetic monopole.
2. Building of atomic reactors to provide heat and power at isolated American bases in the Antarctic and the Arctic.
3. A new socioscience research attempt to understand the factors fundamental to peace and understanding in the world, a consequence of the new Federal administration.
4. Some progress in understanding and perhaps in treating cancer, heart and circulatory disorders and other ills.

Considering first the high energy research upon matter, it can be foreseen that:

The giant accelerators in the range of tens of billions of electron volts that went into operation in 1960 will begin to duplicate under control the kinds of radiations that have only heretofore been produced by natural processes in the reaches beyond the earth.

At Brookhaven National Laboratory on Long Island with its 33 Bev machine it is likely that the completely new kind of fundamental particle, the magnetic monopole, will be discovered.

Even more important, perhaps, the Brookhaven accelerator and the 28 Bev proton synchrotron at CERN, Geneva, will create more anti-matter so that it can be studied and better understood. The production of antinucleons, K-mesons and hyperons and other "strange particles" will be more efficient with the new machines.

The six Bev electron synchrotron at Cambridge, Mass., will begin operation during the year to set a new world's record for high energy electrons.

Experiments will continue the Atomic Energy Commission's attempts to harness the fusion reaction of the hydrogen bomb so that it can be slowed and used for power. Success in this endeavor is perhaps overdue, since considerable progress was evident in 1958 at the Geneva atomic sessions.

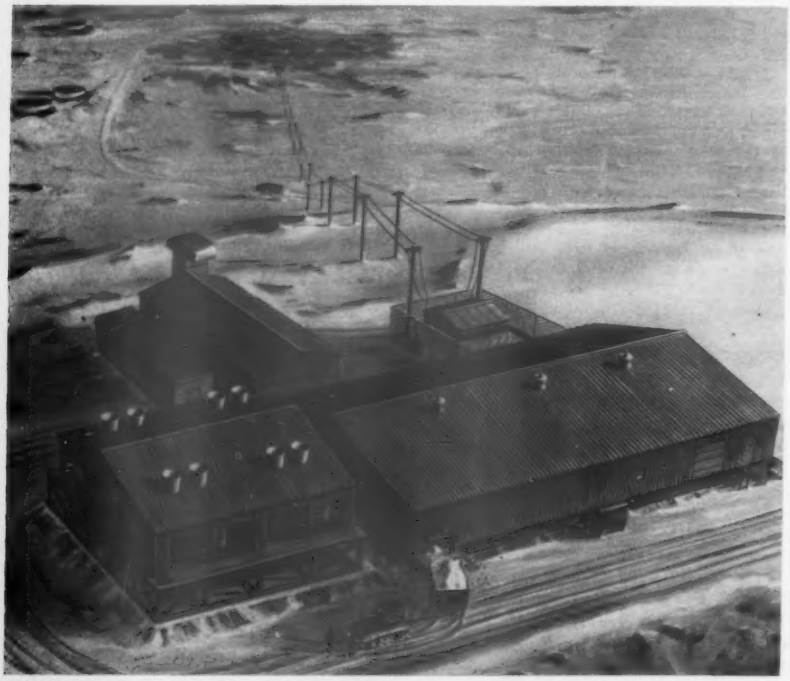
The question of atomic testing unresolved during 1960 will be reopened, and the major planning for an atomic explosion to be used to dig a harbor in Alaska will continue. If agreement between the United States and the USSR will allow, this peaceful use for the H-bomb may be given a trial, if not in 1961 then in 1962.

Detection of atomic explosions is still very much an unsolved problem, and this is a barrier to the policing of agreements on atomic testing.

About a hundred seismographs having uniform characteristics will be installed at strategic stations throughout the world. These seismographs will record long and short period seismic waves in two horizontal and one vertical direction and will time events within one-tenth of a second.

Seismologists will have greater capabilities of distinguishing between underground explosions and natural earthquakes from analyses of the records. This will be offset, in part, by recently developed techniques in masking explosions through "decoupling" methods. The capability to distinguish between underground nuclear and chemical explosions is doubtful.

Improved techniques in telemetering seismic signals from outposts or satellite stations to a central station will be developed. Continuously operating tape recorders will supplement conventional visual recording or on photographic paper. Techniques toward eliminating seismic noise, hence improving capabilities of recording weak seismic signals, will be developed.



ANTARCTIC'S FIRST ATOMIC POWER PLANT—Late in 1961 a 1,500 electrical kilowatt nuclear plant will be transported by the Martin Company to McMurdo Sound, principal base for all United States scientific efforts in Antarctica, and early in 1962 it will begin to replace oil as the fuel for heat and power at this outpost.

Continue Space Exploration

The drive to explore space as a by-product of the nation's military missile program will continue. Satellites are now relatively conventional scientific instruments, and the fact that some of the launching attempts are not successful should not be too disturbing. Some failures are taken into account in the planning and the record is better than it appears. The Russians have failures, too.

In the fields of cosmic radiation and space research, the following developments should be watched in 1961:

A search, with the help of rockets and satellites, for gamma rays, in the primary cosmic radiation may reveal the presence of such electromagnetic radiation. Hitherto the presence of such gamma radiation has not been clearly established through balloon flights.

The international cooperative experiment in which 80 liters of nuclear emulsion were exposed at high altitude, should yield new information about interactions of the ultra-high energy cosmic-ray primaries—those above a million million electron volts.

The prospect of establishing a clear connection between auroras and the outer Van Allen radiation zone may improve as a result of further observations. Thus far, the latitude at which most auroras appear, and the latitudes at which the horns of the outer

radiation belt project down toward the earth, do not appear to coincide.

The long-standing question as to whether an appreciable abundance of the elements, lithium, beryllium and boron, is present in the primary cosmic radiation may be settled.

It will not be surprising if in 1961 Red China becomes the fifth atomic power by exploding its own fission atomic bomb, as France did in 1960. Probably this can be accomplished without necessarily the aid of Russia.

Russia may announce that it has atomic submarines. The atomic fleet of the United States will continue to grow and so will the production of atomic power in our nuclear plants.

The new look at the aspects of the planet on which we live, which began in the International Geophysical Year, will continue to sharpen with continued developments and more analysis of data.

Automated Weather Forecasting

Automation in weather forecasting will increase at several centers, with the result that there will be an effect on predictions issued experimentally and for public use. Old and new satellites will continue to give meteorological information to be analyzed and fed into the forecasting computer machines. The record of Explorer VII when evaluated in the year will give a determination of the global heat balance, a new value for the solar constant, and the first direct heat calculations of individual storms. By use of radar, airplanes and ground observations, tornadoes, hail and other severe storms of spring will be observed more extensively and fully than ever before.

New observations in Antarctica may tell whether the lines of force of earth's magnetic field, near the poles, close from one hemisphere to the other or are lost in the interplanetary magnetic field.

We should know whether the "whistler" mode of radio propagation, previously a scientific curiosity, has a significant role to play in radio communication.

Study IGY Data

Further study of International Geophysical Year data is likely to show that many distinctive ionospheric phenomena can be observed in the airglow as well as by radio. The differences among these phenomena will throw light on relative roles of excited atoms as contrasted to electrons.

The reduction of IGY data, their flow to World Data Centers and publication of summaries in the IGY Annals will be virtually complete. The international use of IGY data will reach its peak level.

Planning will begin for the little sister to the IGY, the Solar Activity Minimum Program of 1964-65. This will involve only the atmospheric sciences where the rhythm of solar changes is important. This will give the necessary amount of comparison data at minimum solar activity to interpret fully IGY observations in fields where there are marked changes with solar activity.

There will be further probing of the great unobserved universe revealed to us by radio waves caught by the new giant radio telescopes, particularly the one in West Virginia. There will be concentration upon why different types of peculiar galaxies have similar radio spectra and magnitudes. Radio observations of the planets Venus and Jupiter will be resumed, and accurately determined radio sources will help to continue the exploration of the radio universe and its comparison with that shown by light.

For the growing complexity of computers being put into use in many varieties for a multiplicity of purposes, an attempt will be made to have them use the same mathematical "language" oriented to the problems they tackle. Each of the giant machines will need a translator or compiling mechanism to adapt descriptions of the problems fed it to the special way it handles the data.

In medical research, more adequately supported than ever before in the world's history, basic information, only available after continued work, is likely to begin to give clinically applicable results. Prediction of specific results is difficult.

Under the new Democratic administration of President John F. Kennedy a continued expansion of scientific research and application can be expected. There will probably be new emphasis upon the sociological and psychological angles of international relations, with attempts at practical application to a "warm" peace.

• Science News Letter, 78:440 December 31, 1960

GENERAL SCIENCE

Postmortem on 1960 Forecast in Science

➤ THE SCIENCE FORECAST for 1960 made by Watson Davis, director of Science Service, issued a year ago was fulfilled in many respects.

The drive to make the U. S. Navy nuclear powered continued with more nuclear submarines launched and put into service. The nuclear ship Savannah did progress as predicted.

The Dresden, Ill., atomic reactor and the Yankee atomic installation in Massachusetts both began preliminary production as foreseen. Two great atomic accelerators for research began work, that at Brookhaven on Long Island, New York, and CERN at Geneva, began operation during the year as predicted.

The Neanderthal discoveries in Iraq were new finds of anthropological significance which it was suggested in last year's predictions would be made.

The ban on atomic explosions did continue during the year, but international cooperation did not get to the point where tests of underground blasts to determine their detectability were made.

Satellites launched included one that was used as a relay point for radio transmissions. This was the satellite Echo I in the form of a 100-foot balloon which shone like a bright star and was seen by millions of people.

Satellite observations also showed that there are, as suggested in the prediction, other bands of radiation high above the earth additional to the original Van Allen belt discovered previously.

There was significant development in mechanization of weather mapping by means of computers and utilization of information gathered by satellites, as foreseen.

The hope expressed that man would make his first short hop into an orbit around the earth was not fulfilled, and remains to be accomplished some time in the future.

The hope, not listed as a definite prediction, that among the thousands of drugs being tested on animals a chemotherapeutic agent of promise in controlling cancer might be found was not fulfilled.

• Science News Letter, 78:441 December 31, 1960

Questions

AGRICULTURE—How was the self-improving barley developed? p. 437.

PHYSICS—What kind of light waves were generated for the first time with the uranium maser? p. 434.

TECHNOLOGY—How many bits of information can the cryogenic thin film memory plane store? p. 438.

Photographs: Cover, U. S. Air Force; pp. 434 and 438, International Business Machines Corporation; p. 435, University of Florida; p. 437, University of California; 439, The Martin Co.; p. 444, Waltham Watch Co.

ZOOLOGY

Plans for National Zoo

A "MASTER PLAN" for expanding the facilities of the National Zoological Park was presented to the Smithsonian Institution by the Friends of the National Zoo in Washington, D. C.

The plan is aimed at preventing the Park from "becoming a second-rate municipal zoo." The crisis, the Friends believe, is due chiefly to the fact that zoo expenses are included in the District of Columbia budget.

A spokesman for the District Commissioners agreed with the Friends' position that a National Zoo should be nationally financed.

The Master Plan was conceived by landscape architects Meade Palmer and Morris Trotter, both retained by the Friends, a non-profit organization. It would provide more working space by keeping autos out of the central park area, turning the road that cuts through the middle into a "greenway" for pedestrians, building a road around the park, and providing parking space for 3,000 to 4,000 cars on the zoo's outskirts. Thirteen new buildings would be added, and Rock Creek would be rechanneled to form a picnic island.

The main entrance on Connecticut Avenue would be widened into an oval plaza including a new and larger restaurant, a new administration building and a public auditorium. This area could remain open in the evening when the rest of the park is closed. A new hospital and research center would be added as well as a guest house for visiting scientists and research workers, and a "monkey island."

Another major feature of the plan is a proposed breeding zoo—several thousand acres located some distance from Washington. This second zoo would be used for basic research and for breeding species threatened with extinction in their native habitats.

Dr. Theodore Reed, director of the zoo, said the ideal situation would be to have several breeding zoos, strategically placed in various locations across the country.

Whether the plan will be adopted by the Smithsonian, which directs the zoo, is uncertain. Dr. Leonard Carmichael, Secretary of the Smithsonian, said he was very impressed with the plan and would present it to the trustees but could not predict what action they would take.

Where the necessary funds would come from has not been discussed yet, but the plan is so constructed that it could be completed in five years or 25 years, as the money became available.

• Science News Letter, 78:442 December 31, 1960

Do You Know

One of the glands that controls social existence and produces harmony in bee colonies has been successfully removed from living *bees* for the first time.

Oil from an offshore well can now be transported directly to shore through a pipe on the ocean bottom.

Young adults, particularly women, are the chief victims of multiple *sclerosis*, which strikes one out of every 820 Americans.

The destruction of agricultural insect *pests* is one of the most important tasks in man's fight against hunger.

The microdosimeter, a tiny new device for measuring *radiation* dosage anywhere within the body, has been developed.

• Science News Letter, 78:442 December 31, 1960

MEDICINE

Syphilis Increases in U. S.

INFECTIOUS SYPHILIS in five United States cities has increased more than 400% in the 1960 fiscal year, compared with fiscal 1957.

The cities are Long Beach and Oakland, Calif., and Newark, N. J., New Orleans, La., and Seattle, Wash., according to the latest report from the Communicable Disease Center, Atlanta, Ga.

Dr. William J. Brown, chief, venereal disease branch, U. S. Public Health Service, said much of the syphilis is occurring among teen-agers and often in quarters where it would be least suspected.

Other cities that have reported a 100% or more increase are:

On the East Coast, Atlanta, 100%; Jacksonville, Fla., 115%; Pittsburgh, 163%; Philadelphia, 267%; New York, 305%; District of Columbia, 345%; Miami, 368%.

In the Middle States, Houston, 104%; Chicago, 109%; Dallas, 140%; Fort Worth, 206%.

On the West Coast, San Francisco, 157%; San Diego, 180%; Los Angeles, 274%; Portland, 290%.

Public Health authorities advise anyone who suspects he has a venereal disease to be treated at once. He can report to his private physician or to the local health department.

In most cases the cure is fairly simple with benzathine penicillin, or in cases of allergy to this antibiotic, with erythromycin or tetracycline. Persistent follow-up is necessary for extended treatment and observation.

One of the results of untreated syphilis is the dangerous psychosis known as paresis. Dr. Brown said it is not generally known that the care of paretics in tax-supported mental institutions alone is costing $48,000,000 a year—a fraction of the total cost of this disease.

• Science News Letter, 78:442 December 31, 1960

RADIO ASTRONOMY

Remnant of Supernova Cause of Galactic "Spur"

THE REMNANT of a supernova, a star that suddenly explodes to a brightness equal to hundreds of millions of suns, may cause the long-puzzling feature of the Milky Way galaxy known as the "spur."

This curious feature can be seen only when the sky is scanned by radio waves. It gives no visible effects, but this may be because a dying supernova would have low optical brightness.

The radio radiation emitted by the spur is fairly intense, Drs. R. Hanbury Brown, R. D. Davies and C. Hazard of the Nuffield Radio Astronomy Laboratories, Jodrell Bank, Macclesfield, England, report. The spur appears to emerge from the plane of the Milky Way galaxy at a longitude of about 30 degrees and run upward toward the north galactic pole. The explanation of the radio sky's curious feature is outlined in the Observatory, 80:191, 1960, a report of the Royal Greenwich Observatory, London.

• Science News Letter, 78:442 December 31, 1960

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New Ideas and Gadgets

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BOBBY PIN DISPENSER of plastic is handpainted and elaborately jeweled. Press down the top and a bobby pin automatically rises to your finger tips. The dispenser is available in pink, aqua or lavender.

• Science News Letter, 78:444 December 31, 1960

GAME TABLE of aluminum has three different game boards nested in the top and a storage compartment beneath for game pieces. Offset spaces handle glasses and ash trays without getting in way of those playing chess, checkers or other board games. The table and equipment are aluminum throughout.

• Science News Letter, 78:444 December 31, 1960

TOWEL AND CLOTHES POLE may be adjusted to fit from floor, bathtub, sink or counter to the ceiling. The three towel arms and two hanger hooks may be set at various heights to suit the needs of members of the family. Available in chrome or brass finish, the pole provides seven feet of usable space for hanger and hooks.

• Science News Letter, 78:444 December 31, 1960

ELECTRIC WRIST WATCH, shown in the photograph, is powered by a battery smaller than a dime. Battery is said to give 13 months service and is easily replaced by unscrewing plate at rear of watch. It takes the place of mainspring as the watch's source of power, thus requiring fewer working parts in the watch.

• Science News Letter, 78:444 December 31, 1960

GOLF CART ACCESSORY is a board or rack that holds score card, two golf balls, tees, pencil and cigarette. It fits on the cart handle. One model also has an attached pencil sharpener, a hanger for a towel, and space for a pack of cigarettes.

• Science News Letter, 78:444 December 31, 1960

WEATHER STRIPPING of vinyl plastic can be installed with just a pair of garden shears and a tack hammer to provide permanent weather sealing for doors and windows. The vinyl material will not bend, tear or decompose with age or wear; it adjusts automatically to compensate for door warpage and can be painted. The weather stripping comes in standard doorsize sets.

• Science News Letter, 78:444 December 31, 1960

WATER PURIFIER UNIT consists of a fully automatic chlorinator and a filter unit for use where iron water is a problem. The chlorinator kills disease bacteria and puts the iron into an insoluble state. The filter removes the precipitated iron and chlorine, as well as other impurities.

• Science News Letter, 78:444 December 31, 1960

POCKET-SIZE STOVE fits in the palm of the hand but could be used to cook a meal. The collapsible stove uses dry fuel tablets that light instantly to boil a pint of water, grill hot dogs, heat soup or warm hands on chilly days. Stove and fuel weigh only six ounces.

• Science News Letter, 78:444 December 31, 1960

Nature Ramblings

AT THIS TIME of year in Russia, the evergreens are coming into their own. In that snowy country, the gift-giving season is New Year's Day and the Christmas tree is a New Year tree. Traditionally, fir trees are illuminated with twinkling lights, and the parks, streets and squares are decorated with colored lanterns.

The Russians have an approximate equivalent of the American tree that stands on the White House lawn and is lighted by the President on the day before Christmas.

This is the big decorated fir tree displayed in the white-marbled Hall of the Columns in the Moscow House of the Trade Union. The Hall is transformed into a fairyland, where thousands of children receive presents and watch genial Jack Frost lead the Snow Maiden into the midst of birds and beasts dancing in the snowflakes.

Toward evening, when the younger children's parties are over, the New Year tree, topped by a red star, is again the center of merrymaking as students from the higher classes gather for balls, masquerades and concerts featuring music by Russian composers.

Trees After Christmas

More recently, a second tree, placed in the Kremlin Building and surrounded by similar pageantry and presents, has come to be regarded as an equal holiday center, and New Year festivals are arranged in nearly every large town in Russia.

After the holiday, however, the Russians have the same problem already facing 40,000,000 Americans. This is: what to do with the tree.

Stripped of tinsel and baubles, the dried and needleless trees all present a bedraggled appearance, be they fir, pine, spruce, red cedar or juniper. But their usefulness need not be over.

Branches cut from the tree can be used as protective cover for perennials, or, in some cases, a thick layer of needles will serve as a mulch that adds needed acid to the soil.

Where conditions and well laid plans call for it, Christmas trees can be dumped into stocked lakes as hiding places for fish. Fishermen who know the trees' location can use it as a convenient guide to where the fish are.

In areas where vegetation is scarce in winter, sportsmen's organizations gather used Christmas trees and make protective brush piles where next season's quarry, rabbits and quail, can hide during the colder months. —GLORIA BALL

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